Prone insertion of the 0.5 size intubating laryngeal airway overcomes severe upper airway obstruction in an awake neonate with Pierre Robin syndrome

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Case Presentation:
We present a case of a 1-day-old, 3-kg neonate with severe upper airway obstruction secondary to Pierre Robin syndrome scheduled to undergo a CT scan. The patient had significant sternal retractions and oxygen desaturation when supine despite the use of a nasopharyngeal airway, and therefore kept in the prone position since birth.

Anesthetic considerations:

● Obtaining intravenous access
● Awake supraglottic airway device (SAD) placement
● Tracheal intubation vs. SAD alone for airway management

Commonly described methods for managing these difficult airways involve alleviation of the upper airway obstruction prior to the induction of anesthesia with the use of an oral/nasal pharyngeal airway, or a SAD. Tracheal intubation may then be facilitated by fiberoptic bronchoscopy via the SAD. Our experience using the air-Q™ intubating laryngeal airway (air-Q™) (Cookgas LLC; St Louis, MO, USA) as an intubation conduit in neonates and infants with difficult airways has been favorable.

In the CT suite, intravenous access was established prior to any airway intervention. Aprocaine 0.1% MG was then administered as an antisialagogue. As the patient was unable to tolerate the supine position, management of the airway was performed with the patient awake and in the prone position, without administration of anesthetic agents. The primary plan was to place the air-Q awake, and manage the airway with just the SAD for the CT scan. If necessary, the trachea could be intubated through the SAD using a fiberoptic bronchoscope.

The neonate’s head was extended and stabilized over the edge of the bed by an assistant, and a 0.5 size air-Q was placed with minimal gagging. The air-Q was well-tolerated after placement, with relief of the upper airway obstruction, even in the supine position, as evidence by the absence of sternal retractions and thoracoabdominal asynchrony. Anesthesia was then induced with 8% sevoflurane through the air-Q while the patient was breathing spontaneously, then maintained at an end-tidal concentration of 3%. Before proceeding with the CT scan, fiberoptic bronchoscopy of the laryngeal view through the air-Q was performed to confirm feasibility of tracheal intubation if necessary. The CT scan was completed uneventfully in 15 minutes, and the air-Q was removed at the conclusion of the procedure with the neonate awake. Following removal of the air-Q, the child was placed in the prone position, and transferred back to the Neonatal Intensive Care Unit.

Discussion:
Prone positioning may be necessary in some neonates with severe upper airway obstruction. Although SAD’s are conventionally placed in supine patients, the clinician may want to consider placing the SAD in these cases with the patient in the prone position. Some advantages include forward distraction of the tongue and epiglottis by gravity, allowing for improved air exchange and oxygenation during device placement, and exposing a larger posterior pharyngeal space for easier placement. Additionally, the prone position may reduce the risk of pulmonary aspiration due to gravitational forces draining secretions out of the oral cavity.

A disadvantage to consider in managing the airway in a prone position would be the challenge of face-mask ventilation, particularly when the clinician may have very little experience with this technique. As with any difficult airway scenario, intravenous access should always be established prior to any airway manipulation as potential complications such as laryngospasm on placement of the SAD, vagally-induced bradycardia from upper airway instrumentation, or hypoxia can occur acutely.

Insertion of a supraglottic device in the prone position can be useful in cases of neonates with severe airway obstruction when the supine position cannot be tolerated.

References: